

On *Merocryptoides*, a Leucosiid Crab Genus (Crustacea: Decapoda: Brachyura) Endemic to Japan, with Description of Two New Species

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ABSTRACT—The taxonomy of the leucosiid crab genus *Merocryptoides* Sakai, 1963 is revised, and two new species, *M. ohtsukai* and *M. peteri* are described from Japan. These new species resemble the type species of the genus, *M. frontalis* Sakai, 1963 from Japan, but can be distinguished from it by the form of the cardiac tubercle, male abdomen, male telson and first male pleopods. *Merocryptoides ohtsukai* is also distinguished from *M. peteri* by the broadly V-shaped ridge on the gastric tubercle, the lateral margin of the hepatic region not ridged and the form of the median tooth of the epibranchial margin.

INTRODUCTION

The genus *Merocryptoides*, the family Leucosiidae, was originally established by Sakai (1963) for only one species, *M. frontalis* Sakai, 1963 from Japan. In May 2000, the first author had an opportunity to join the cruise of the TRV *Toyoshio Maru* of Hiroshima University, investigating the zooplanktonic, benthic and nektonic faunas of the Nansei Islands, southwest Japan, conducted by Dr. S. Ohtsuka, the Associate Professor of Hiroshima University. During this cruise, the first author collected many brachyuran specimens by dredging or sledge nets in the sea from the Seto Inland Sea southwards to the Kerama Islands along the Nansei Islands. Among this material was two specimens belonging to a new species of *Merocryptoides*. In addition, another specimen collected from off Kisami, Shimoda, Izu Peninsula, central Japan, also differed from both the above mentioned species. In this paper, we describe two new species from Japan and review the taxonomy of the genus *Merocryptoides*. We redescribe *M. frontalis* in detail to clarify the characters of the genus and the differences between this species and the new ones.

Measurements, given in millimeters, are of the greatest carapace length (including the posterior lobe) and breadth, respectively. The descriptive terminology generally follows Ihle (1918), including the use of the abbreviations T and R for the

abdominal formulae, which denote the telson and rest of the fused abdominal segments, respectively. All the specimens examined are deposited in the National Science Museum, Tokyo (NSMT) and the Showa Memorial Institute, National Science Museum, Tokyo (NSMT-R).

TAXONOMY

Family Leucosiidae Samouelle, 1819

Genus *Merocryptoides* Sakai, 1963

Merocryptoides Sakai, 1963: 220; 1965: 31; 1976: 78; Serène, 1968: 42.

Type species. *Merocryptoides frontalis* Sakai, 1963, by monotypy.

Diagnosis. Carapace as long as broad in males, slightly broader than long in females, subrhomboidal, with postfrontal, median and epibranchial ridges; upper surface covered with rounded granules; frontal region distinctly developed in males, with margin cut into two lobes; gastric region with pair of ridge-bearing tubercles; cardiac region with median tubercle; intestinal region clearly demarcated, trapezoidal, without median ridge; hepatic region well demarcated, with triangular facet present on lateral part; pterygostomial margin with triangular tooth medially; epibranchial region strongly expanded, with transverse, submedian ridge; epibranchial margin with large, triangular tooth on anterior end, forming acute angle with metabranchial margin; metabranchial region deeply concave; lateral surface of branchial region with three small teeth; posterior margin divided into three lobes or undivided. Ocular

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peduncle short. Antennule obliquely folded in fossa, basal segment occupying about half of fossa. Second segment of antenna subcylindrical, folded in orbital hiatus without gap. Afferent channel with weak plication. Buccal frame with fissure at anterior fifth of lateral margin. Maxillule without endopod. Second maxilliped without exopodal flagellum. Basis of third maxilliped completely fused with ischium, remnant suture present on internal surface; exopod relatively narrow, angled on posterior end of lateral margin, with vestigial internal ridge. Cheliped of moderate size; coxal condyle small in both sexes; merus subcylindrical, with two triangular teeth on outer margin; carpus with two crests on outer surface; outer margin of palm crested, divided into two lobes. Ambulatory legs similar in shape; coxal condyles small in males, absent in females; meri subcylindrical, with two triangular teeth on outer margins; outer surfaces of carpi flat, crested on both margins; dactylo-propodal locks present on proximal borders of dorsal surfaces of dactyli. Male abdomen with formula of $1+2+R+T$; first segment transversely subrectangular; second segment transversely narrow; main section composed of completely fused third to sixth segments, elongate trapezoidal, with tooth near distal border. Female abdomen with formula of $2+R+T$; first segment concealed beneath carapace; second segment transversely subrectangular; main section composed of fused third to sixth segments, ovate. First male pleopod slender, tapering distally. Second male pleopod short, about one third as long as first pleopod, filiform, with acute tip.

Remarks. The genus *Merocryptoides* was originally established by Sakai (1963) as an allied genus of *Merocryptus* A. Milne Edwards, 1873. However, *Merocryptoides* is actually not close to *Merocryptus*, but is more similar to a group of small-sized species of *Nursia* Leach, 1819, viz., *N. elegans* Ihle, 1918, *N. japonica* Sakai, 1935, *N. alata* Komatsu & Takeda, 1999, in lacking the endopod of maxillule and an exopodal flagellum of the second maxilliped, the presence of a lateral angle on the third maxillipedal exopod and the form of the abdomen. *Merocryptus* has an endopod of the maxillule and an exopodal flagellum on the second maxilliped (both structures absent in *Merocryptoides*) does not have a lateral angle on the third maxillipedal exopod, and has a female abdominal formula of $1+2+R+T(2+R+T$ in *Merocryptoides*). *Merocryptoides* can, however, be distinguished from these and other *Nursia* species by the protuberant male frontal region, possession of the transversely radiating epibranchial ridges, the proportionally narrowed third maxillipedal exopods and having bilobed outer margins of the chelipedal palms. The type species and two new species described herein are known only from Japanese waters thus far.

***Merocryptoides frontalis* Sakai, 1963**

(Figs. 1, 4a, b)

Merocryptoides frontalis Sakai, 1963: 220, fig. 4 [type locality: Sagami Bay, Japan]; 1965: 32, pl. 14(3), fig. 3a, b; 1976: 79, fig. 40a, b, pl. 25(6); Serène, 1968: 42.

Material examined. Japan. Arasaki, Sagami Bay; shoal water of tide-pool; coll. His Majesty; 17 Jul. 1962; holotype, ♂

(3.4×3.3), allotype, ovig. ♀ (4.4×5.3), NSMT-R-Cr. 3851. Kurosaki, Sagami Bay; shoal water of tide-pool; coll. His Majesty; Jul. 1962; paratypes, 2 ♂♂ (3.2×3.1, 3.4×3.3), 1 ♀ (4.7×5.5), NSMT-R-Cr. 2703. Kurosaki, Sagami Bay; shoal water of tide-pool; coll. His Majesty; 20 Jul. 1962; 3 ovig. ♀♀ (4.3×5.2–4.5×5.4), NSMT-R-Cr. 2705. Off Kisami, Shimoda, Izu Peninsula; 18–45 m; coll. K. Nakamura; 23 Aug. 1982; 2 ♂♂ (3.5×3.7, 4.8×4.4; both heavily covered with membraniporid bryozoan), 1 ovig. ♀ (5.3×6.6), 1 juv. (2.5×2.7), NSMT-Cr. 10406.

Description. Carapace (Figs. 1a, 4a, b) subrhomboidal in general outline, as long as broad in males, 1.2 times broader than long in females, armed with postfrontal, median and transversely running epibranchial ridges; upper surface entirely covered with round, flattened granules. Front strongly produced, rather deeply concave medially, about 0.4 times as broad as carapace in males, about 0.3 times as broad as carapace in females; margin subtruncate, with small median notch; postfrontal ridge beaded, running obliquely from each frontal-orbital angle towards midline, separated from each other by shallow median groove. Orbital fissures α and β straight, γ broadly V-shaped, with suture. Mesogastric region longitudinal, broadly convex, continuous from frontal region, getting narrower towards cardiac tubercle. Hepatic region clearly demarcated, rectangular, with triangular facet on lateral part, facet rimmed with ridged row of granules. Pterygostomian margin convex outwards, with lobular triangular projection medially, separated from epibranchial margin by U-shaped notch. Gastro-cardiac region prominently raised, with pair of tubercles on gastric region and one tubercle on cardiac region; gastric tubercle with C-shaped ridge that is sometimes fused with epibranchial ridge; cardiac tubercle transversely convex. Intestinal region demarcated, trapezoidal, elevated posteriorly, divided from intestinal region by shallow transverse groove. Epibranchial region markedly projecting laterally, anteriorly sloping from epibranchial ridge; margin weakly ridged, straight, obliquely diverging, with large triangular, somewhat downwards directed projection on anteriormost edge; epibranchial ridge conspicuous, broad in females, almost transversely straight, extending from near gastric tubercle to tip of epibranchial region, beaded with transversely oblong granules in males, flat rounded granules in females. Metabranial region deeply concave between epibranchial ridge and intestinal region; margin curved inwards. Lateral surface of branchial region with three small rounded teeth, anterior two teeth concealed beneath epibranchial projection, anterior tooth largest, median tooth inconspicuous, posterior tooth at midlength of metabranial margin. Posterior margin almost straight, not divided into lobes, obtusely angled with metabranial margin.

Mandible (Fig. 1b, c) well calcified; cutting edge triangular in outline, pointed medially; endopod palp three-segmented, terminal segment fringed with short setae. Maxillule (Fig. 1d): coxal endite subcylindrical, directed mesially, with some terminal setae; basial endite triangular, with stout, thin setae on mesial margin; endopod absent; epipod small, directed later-

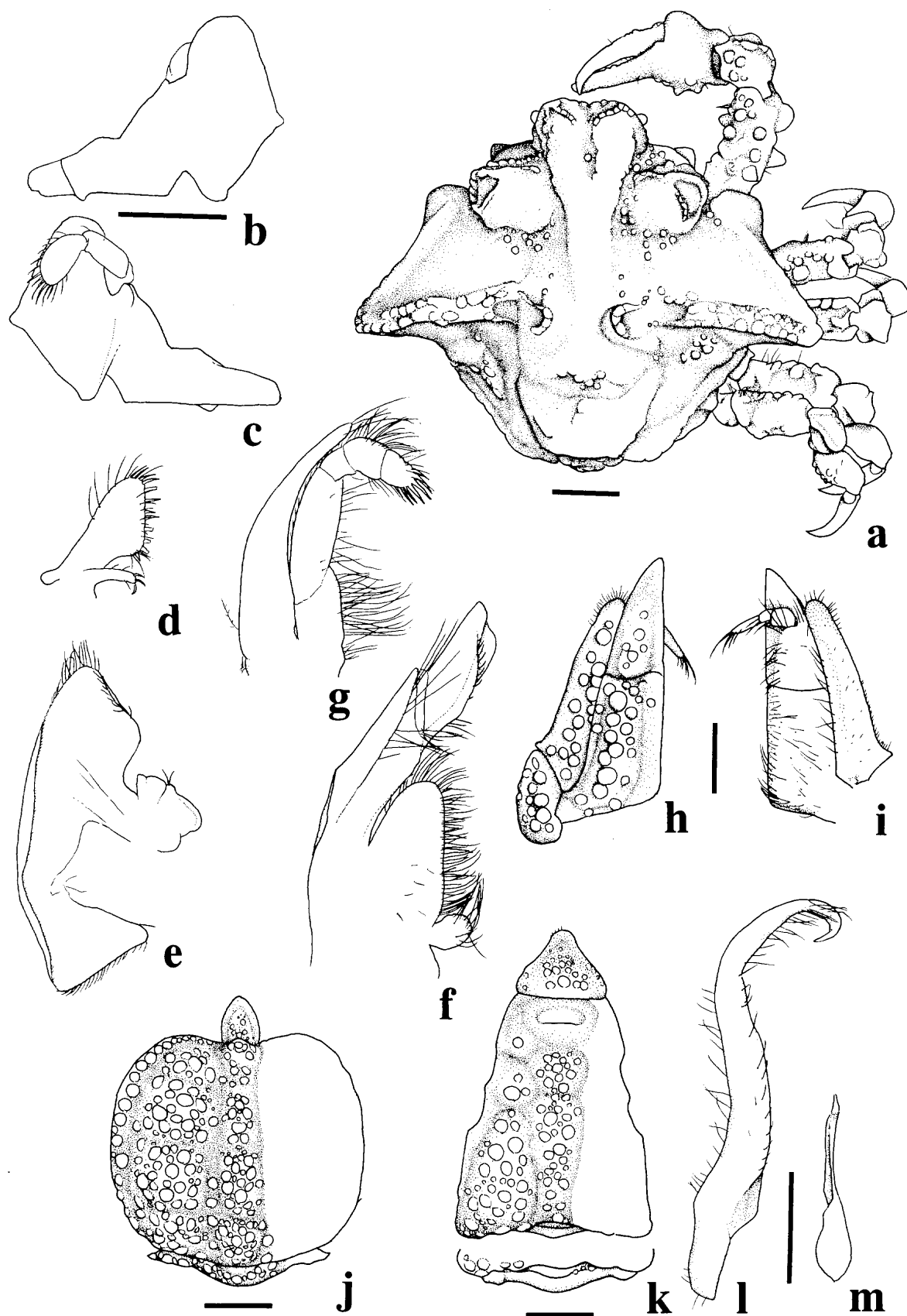


Fig. 1. *Merocryptoides frontalis* Sakai, 1963. a-j, ovigerous female (5.3×6.6 mm); k-m, male (4.8×4.4 mm) from off Kisami, Shimoda, Izu peninsula, central Japan (NSMT-Cr. 10406). a, carapace, dorsal view; b, mandible, external view; c, same, internal view; d, maxillule, external view; e, maxilla, external view; f, first maxilliped, external view; g, second maxilliped, external view; h, third maxilliped, external view; i, same, internal view; j, female abdomen, ventral view; k, male abdomen, ventral view; l, first male pleopod, external view; m, second male pleopod, external view. Scales for a and j = 1 mm; scales for b-g, h-i, k and l-m = 0.5 mm.

ally. Maxilla (Fig. 1e): coxal endite small, rounded; basal endite bilobed, with some terminal setae on proximal lobe; endopod weakly bilobed; exopod (scaphognathite) longitudinally expanded into ovate structure, entirely fringed with short plumose setae. First maxilliped (Fig. 1f): coxal endite semiglobular, with dense setae; basal endite lobular, largely expanded into triangular structure, fringed with long, plumose setae; endopod lobular, longitudinally expanded, fitting in efferent channel, highly plicate on upper surface, with short setae along plication, lateral half folded downwards; exopod longitudinally filiform, with long setae on distal part of mesial margin, bearing flagellum with long terminal setae. Second maxilliped (Fig. 1g): endopod with long setae along inner margins of ischium and merus, with short setae along lateral margin of merus, densely setose around outer margin of propodus, dactylus fringed with stout setae around tip; exopod filiform, tapering distally, with long setae on distal portion of mesial margin, without flagellum.

Third maxilliped (Fig. 1h, i) covered with granules of various sizes; ischium longitudinally convex in lateral two-thirds; merus slightly bent dorsally in situ, 1.0–1.1 times as long as ischium along mesial margin; exopod relatively narrow; lateral margin of exopod sharply angled at proximal end, fringed with short plumose setae; internal exopodal ridge vestigial.

Cheliped (Fig. 1a) moderate, 1.0–1.1 times as long as carapace in males, 0.9 times as long as carapace in females, measured along outer margin from merus to tip of movable finger, entirely covered with rounded, sometimes acute granules except on fingers; coxal condyle small, oblong in both sexes; merus subcylindrical, bearing two triangular lobes on distal end and midlength of outer margin, distal lobe twice as broad as the other, with small submarginal tooth on somewhat proximal position of median lobe; carpus short, with two crests on outer surface; palm convex dorsally; outer margin of palm crested, divided into two lobes, distal lobe strongly convex outwards; fingers subconical, 1.4–1.5 times as long as palm along outer margin, covered with minute granules; both cutting edges of fingers finely dentate on distal halves, meeting only at tips.

Ambulatory legs (Fig. 1a) similar in shape, gradually decreasing in length from first to fourth, covered with granules of various sizes and shapes; coxal condyles small, rounded in males, absent in females; meri subcylindrical, with small triangular teeth and acutely triangular teeth at distal end and midlength of outer margins, respectively; carpi triangular in cross-section; outer surfaces of carpi flat, crested on both margins; propodi rather compressed, weakly crested on outer margins; dactyli subconical, slightly incurved, with obvious dactylo-propodal locks on proximal borders of dorsal surfaces, covered with microscopic granules, inner margins finely dentate.

Male thoracic sternites coarsely covered with pearly granules of various sizes, deeply concave between sternites, episternites not divided entirely; first to third sternites fused together; abdominal cavity reaching to buccal cavern, not ridged on margin.

Female thoracic sternites covered with closely set, flattened round granules of various sizes; first to third sternites fused together, but deeply concave between remnant first and second segments; abdominal cavity reaching to buccal cavern, both margins of abdominal cavity ridged on subdistal part, with V-shaped notch.

Male abdomen (Fig. 1k) coarsely covered with pearly granules of various sizes, with formula of 1+2+R+T; first and second segments very short, transversely subrectangular, second segment laterally concealed; main fused section elongate, rhomboidal, composed of third to sixth segments, divided into subregions by two longitudinal and two transverse grooves, swollen at both sides of proximal half, constricted medially and distal one-third, with large tooth near distal border; telson broadly triangular with rounded tip, slightly constricted at distal third, fringed with short setae.

Female abdomen (Fig. 1j) entirely covered with closely set, vesicular granules of various sizes, with formula of 2+R+T; first segment completely concealed beneath carapace; second segment short, transversely subrectangular, medially convex postero-ventrally; main fused section ovate, composed of third to sixth segments, moderately convex ventrally, divided into subregions by two deep longitudinal and three faint transverse grooves, slightly convex along midline but lower than lateral regions, marginally rimmed with pearly granules except proximal margin; telson tongue-shaped, fringed with short setae around tip, directed antero-dorsally in situ.

First male pleopod (Fig. 1l) slender, sinuate, distal fourth directed mesially, tip curled, setose, mesial and lateral margins with soft setae. Second male pleopod (Fig. 1m) short, about one-third as long as first one, proximal two-fifths broad, distal part filiform, tip acute.

Remarks. This species clearly shows sexual dimorphism in the frontal region, with males having a more distinctly developed frontal region. Also females seem to be generally larger than males.

Distribution. Japan endemic—Sagami Bay (type locality), Izu Peninsula, and Kii Peninsula. Occurring in tide-pool, rocky beaches, and also at depths of 18–45 m.

Merocryptoides ohtsukai sp. nov.

(Figs. 2, 4c)

Material examined. Japan. 30°15.00'N, 130°53.30'E (West of Tanega-shima I., Osumi Is., south of Kyushu); dredge; bottom of sand and dead shells, 47 m; coll. H. Komatsu; 25 May 2000; holotype, ♂ (3.5×3.6), NSMT-Cr. 14184; paratype, ♂ (3.7×3.5; heavily covered with membraniporid bryozoan), NSMT-Cr. 14185.

Description of holotype. Carapace (Figs. 2a, 4c) subrhomboidal in general outline, as long as broad, armed with postfrontal, median and epibranchial ridges; upper surface entirely covered with closely set, round granules. Front strongly produced, rather deeply concave medially; margin divided into two lobes by median, broad V-shaped notch; postfrontal ridge running somewhat obliquely from each frontal-orbital angle towards midline. Orbital fissure α short, β moderately long, γ

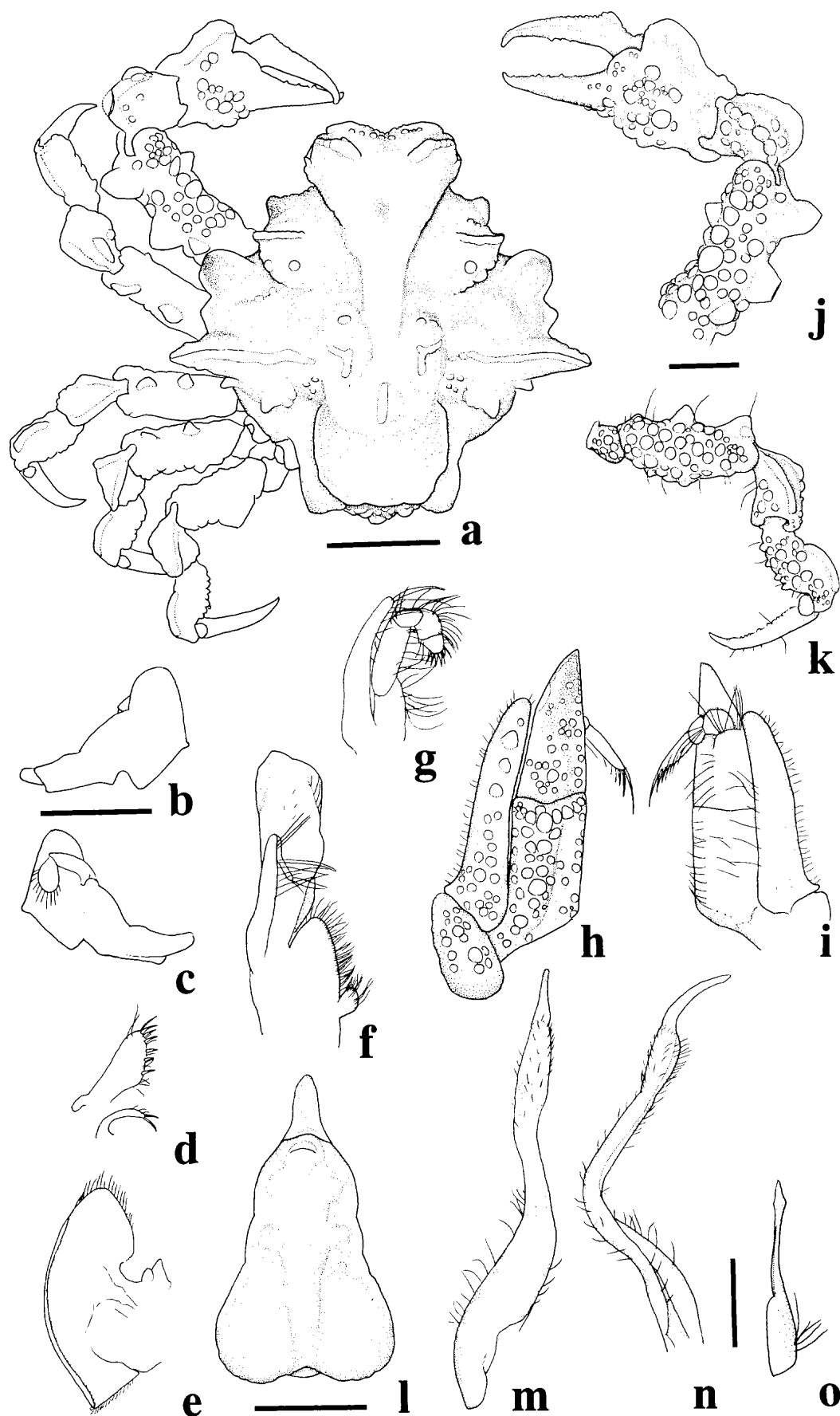


Fig. 2. *Merocryptoides ohtsukai* sp. nov. Holotype, male (3.5×3.6 mm; NSMT-Cr. 14184) from off Tanega-shima Island, Osumi Islands, south-western Japan. a, carapace, dorsal view; b, mandible, external view; c, same, internal view; d, maxillule, external view; e, maxilla, external view; f, first maxilliped, external view; g, second maxilliped, external view; h, third maxilliped, external view; i, same, internal view; j, right cheliped, dorsal view; k, right first ambulatory leg, dorsal view; l, abdomen, ventral view; m, right first pleopod, external view; n, same, mesial view; o, right second pleopod, external view. Scales for a and l = 1 mm; scales for b-i, j-k and m-o = 0.5 mm.

broadly V-shaped, with suture. Mesogastric region convex dorsally, longitudinal, continuous from frontal region, getting weaker towards cardiac tubercle, with rather deep concavity behind frontal region. Hepatic region clearly demarcated, rectangular, with triangular facet on lateral part, rather sloping anterolaterally, ridged on anterior margin of facet only, with distinct large granule on center. Pterygostomian margin convex outwards, ridged, with lobular, triangular, ventrally projecting tooth medially. Gastro-cardiac region prominently raised, separated from intestinal region, with pair of tubercles on gastric region, with broadly V-shaped ridges on gastric tubercles; cardiac region with prominent tubercle, with median longitudinal ridge. Intestinal region rectangular in outline, elevated posteriorly, crested marginally. Epibranchial region markedly projecting laterally, anteriorly sloping from epibranchial ridge; margin entirely rimmed with thin, almost fused, beaded line which is continuous to epibranchial ridge, forming right angle with pterygostomian margin, bearing large triangular lobe on anterior third and small triangular lobe on midlength, forming acute angle with metabranchial margin; epibranchial ridge conspicuous, almost transversely straight, extending from near gastric tubercle to tip of epi-metabran- chial angle. Metabran- chial region deeply concave between epibranchial ridge and intestinal region; margin curved inwards. Lateral surface of branchial region bearing three small, triangular teeth; anterior tooth largest, concealed beneath median tooth of epibranchial margin, median tooth situated at anterior third of metabran- chial margin, posterior tooth on midst of metabran- chial region. Posterior margin divided into three parts; each lateral part lobular, triangular with rounded tip, weakly sloping posterolaterally, with margin continuous to meta- bran- chial margin; median part broadly semicircular, situated lower than lateral lobes.

Mouth parts (Fig. 2b-g) closely resembling those of *M. frontalis*, but different as follows. Maxilla (Fig. 2e): coxal endite very small; basal endite triangular; endopod rounded. First maxilliped (Fig. 2f): endopod lobular, longitudinally expanded, fitting in efferent channel, weakly plicate on upper surface, with short setae along plication.

Third maxilliped (Fig. 2h, i) covered with pearly granules of various sizes; ischium longitudinally convex in lateral two-thirds; merus slightly bent dorsally in situ, 1.2 times as long as ischium along mesial margin; exopod relatively narrow, with three or four subacute granules on distal part; lateral margin of exopod sharply angled at posterior end, fringed with short plumose setae; internal exopodal ridge vestigial.

Cheliped (Fig. 2j) as long as carapace, entirely covered with pearly, sometimes acute granules except on fingers; coxal condyle small, transversely ovate; merus subcylindrical, bearing two subequal, triangular lobes on distal end and midlength of outer margin, submarginally with small, triangular lobe at somewhat proximal position of median lobe; carpus short, with two crests on outer surface, upper surface bearing row of subacute round granules on midline; palm convex dorsally; outer margin of palm crested, divided into two lobes, distal lobe strongly convex outwards; fingers subconical, 1.3 times as

long as palm along outer margin, covered with minute granules, weakly ridged on midline of movable finger; both cutting edges of fingers armed with some irregular, fine teeth on each distal half, meeting only at tips.

Ambulatory legs (Fig. 2k) similar in shape, gradually decreasing in length from first to fourth, covered with pearly granules except dactyli; coxal condyles small, oblong; meri subcylindrical, with two triangular lobes on distal end and midlength of outer margins, lobes getting weaker from first to fourth legs, with large triangular lobe on midlength of inner margin in fourth leg only; carpi triangular in cross-section; outer surfaces of carpi flat, crested on both margins, beaded on lower crests; propodi compressed, crested on outer margins; dactyli subconical, slightly incurved, covered with microscopic granules, with obvious dactylo-propodal locks on proximal borders of dorsal surfaces, inner margins finely dentate.

Thoracic sternites coarsely covered with closely set, pearly granules of various sizes, deeply concave between sternites, episternites not divided entirely; first to third sternites fused together; abdominal cavity reaching to buccal cavern; both margins of abdominal cavity ridged on subdistal part, with V-shaped notch.

Abdomen (Fig. 2l) entirely covered with small round granules, with formula of 1+2+R+T; first segment short, transversely subrectangular; second segment very short, transversely narrow, laterally concealed; main fused section elongate, rhomboidal, composed of third to sixth segments, both sides of proximal half swollen, concave between swollen regions, but gradually becoming convex along midline distally, highest at proximal three-fourths length, constricted medially and distal one-third, bearing large, triangular, directed posteriorly tooth near distal border; telson acutely triangular with rounded tip, fringed with short setae.

First pleopod (Fig. 2m, n) slender, bent medially almost at a right angle, with long soft setae on proximal half of lateral margin and short, stiff setae at distal third, tip translucent, arcuate. Second pleopod (Fig. 2o) short, about one-third as long as first pleopod, proximal two-fifths broad, distal part filiform, tip acute triangular, with some long, soft setae at proximal part of mesial margin.

Color. In spirit, whole body off white, symmetrically speckled with dark brown and orange spots of various shapes and sizes. Spots variable by each individual.

Etymology. This species is dedicated to Dr. Susumu Ohtsuka, the Associate Professor of Hiroshima University, who gave the first author an opportunity to collect crabs on board the TRV *Toyoshio Maru*.

Remarks. The type specimens of *Merocryptoides ohtsukai* sp. nov. were collected by dredging from off Tanega-shima Island, the Osumi Islands, just south of Kyushu, southwestern Japan, at the depth of 47 m. The specimens closely resemble angular fragments of dead shells or pebbles of the bottom. The new species is closely similar to *M. peteri* sp. nov. in having a longitudinally convex cardiac tubercle, a longitudinally convex male abdomen and a medially bent first male pleopod. However, *M. ohtsukai* can be distinguished from

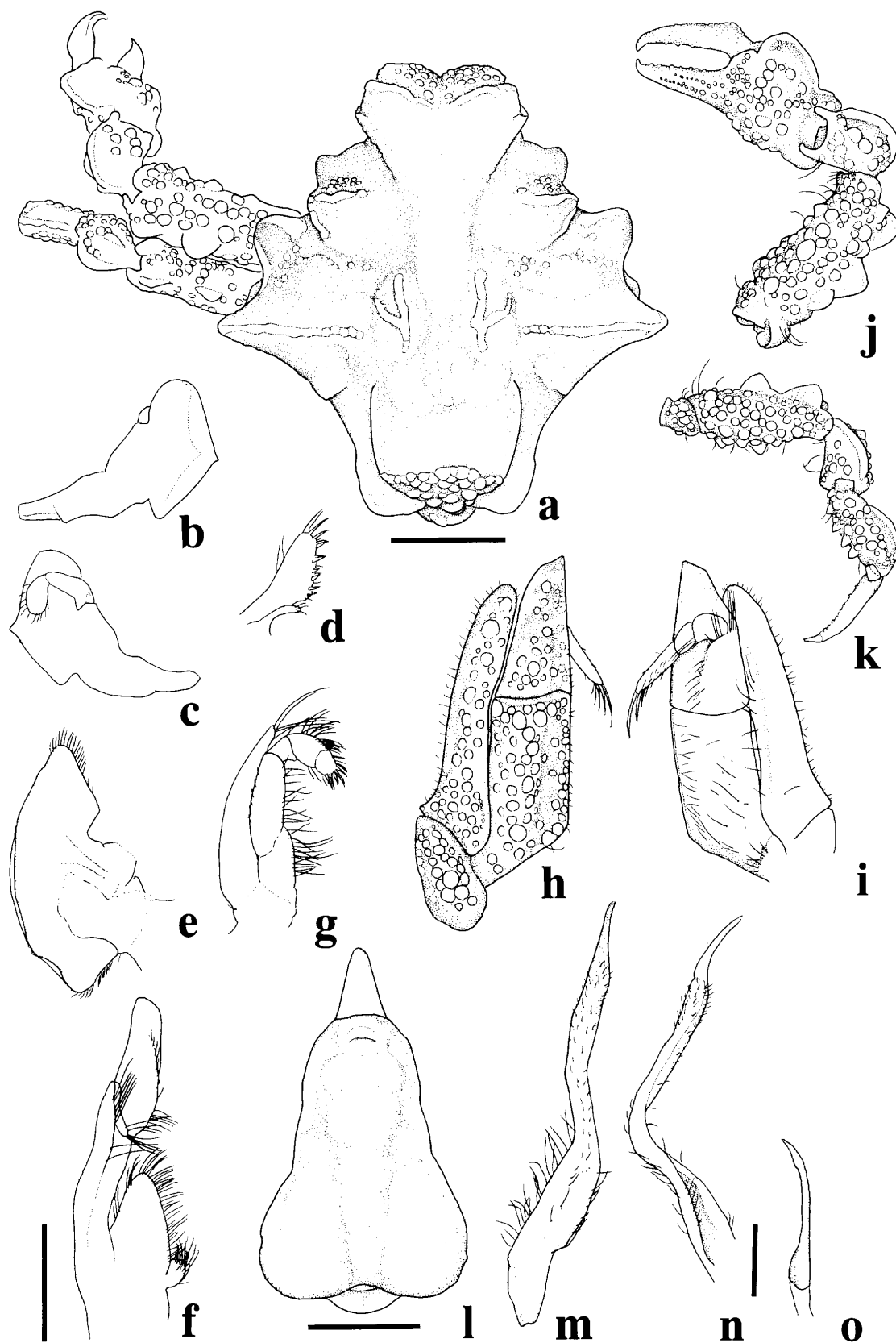


Fig. 3. *Merocryptoides peteri* sp. nov. Holotype, male (3.9×3.9 mm; NSMT-Cr. 9177) from off Kisami, Shimoda, Izu Peninsula, central Japan. a, carapace, dorsal view; b, mandible, external view; c, same, internal view; d, maxillule, external view; e, maxilla, external view; f, first maxilliped, external view; g, second maxilliped, external view; h, third maxilliped, external view; i, same, internal view; j, right cheliped, dorsal view; k, right first ambulatory leg, dorsal view; l, abdomen, ventral view; m, right first pleopod, external view; n, same, mesial view; o, right second pleopod, external view. Scales for a-j-k and l = 1 mm; scales for b-i and m-o = 0.5 mm.

M. peteri by the shape of the ridge on the gastric tubercle (see Fig. 2a and 3a), the unridged lateral margin of the hepatic region and the presence of a median tooth on the epibranchial margin.

In turn, these two new species can be distinguished from *M. frontalis* by that; 1) the cardiac tubercle is longitudinally convex, with a median ridge, whilst that of the latter species is transversely convex; 2) the male abdomen is highly convex along the midline in the main fused section, whilst that of the latter is not convex medially; 3) the male telson is acutely triangular, whilst that of the latter is broadly triangular; and 4) the first male pleopod is bent medially at a right angle, whilst those of the latter is sinuate, with a medially directed, curled tip.

The comparisons of three species of *Merocryptoides*, *M. frontalis* Sakai, *M. ohtsukai* sp. nov. and *M. peteri* sp. nov., are summarized in Table 1.

Distribution. Known only from off Tanega-shima Island in the Osumi Islands (type locality), southwestern Japan, 47 m deep.

***Merocryptoides peteri* sp. nov.**

(Figs. 3, 4d)

Material examined. Japan. Off Kisami, Shimoda, Izu Peninsula; 18–45 m; coll. K. Nakamura; 23 Aug. 1982; holotype, ♂ (3.9×3.9), NSMT-Cr. 9177.

Description of holotype. Carapace (Figs. 3a, 4d) subrhomboidal in general outline, as long as broad, armed with postfrontal, median and epibranchial ridges; upper surface entirely covered with closely set, round granules. Front strongly produced, rather deeply concave medially; margin divided into two lobes by a median, broad V-shaped notch; postfrontal ridge running somewhat obliquely from each frontal-orbital angle towards midline. Orbital fissure α short, β moderately long, γ broadly V-shaped, with suture. Mesogastric region longitudinally convex, continuous from frontal region, getting weaker towards cardiac tubercle. Hepatic region clearly demarcated, rectangular, with triangular facet on lateral part, rather sloping laterally, ridged on anterior and lateral margins. Pterygostomian margin convex outwards, ridged, with lobular triangular tooth medially, tooth projecting ventrally. Gastrocardiac region prominently raised, divided from intestinal region, with pair of tubercles on gastric region, with Y-shaped ridge on tubercles; mesial branch of Y-shaped ridge straight, parallel with midline, lateral branch directed anterolaterally; cardiac region with longitudinally convex tubercle, with weak median ridge. Intestinal region demarcated, trapezoidal, elevated posteriorly. Epibranchial region markedly projecting laterally, anteriorly sloping from epibranchial ridge; margin entirely rimmed with almost fused together beaded line which is continuous to epibranchial ridge, forming right angle with pterygostomian margin, bearing large triangular projection on anterior half, obliquely diverging in posterior half, forming acute angle with metabranchial margin; epibranchial ridge conspicuous, almost transversely straight, extending from near gastric tubercle to tip of epi-metabran- chial angle. Metabran- chial re-

gion deeply concave between epibranchial ridge and intestinal region; margin curved inwards. Lateral surface of branchial region bearing three small triangular teeth; anterior tooth slightly visible between projections of epibranchial margin; median tooth concealed beneath epi-metabran- chial angle; posterior tooth at midlength of metabran- chial margin. Posterior margin divided into three parts; lateral parts lobular, triangular with rounded tip, weakly sloping postero-laterally, its margin continuous to metabran- chial margin; median part semi-circular, situated slightly lower than lateral lobes.

Mouth parts (Fig. 3b-g) closely resembling those of *M. frontalis*, but different as follows. Maxilla (Fig. 3e): endites missing. First maxilliped (Fig. 3f): endopod lobular, longitudinally expanded, fitting in efferent channel, highly plicate on upper surface, with short setae along plication, distal part of lateral third internally folded.

Third maxilliped (Fig. 3h, i) covered with pearly granules of various sizes; ischium longitudinally convex in lateral two thirds; merus slightly bent dorsally in situ, 1.1 times as long as ischium along mesial margin; exopod relatively narrow; lateral margin of exopod sharply angled at posterior end and fringed with short plumose setae; internal exopodal ridge vestigial.

Cheliped (Fig. 3j) moderate, 1.1 times as long as carapace, entirely covered with pearly, sometimes acute granules except on fingers; coxal condyle small, rounded; merus subcylindrical, bearing two subequal, triangular lobes on distal end and midlength of outer margin, submarginally with small triangular lobe at somewhat proximal position of median lobe; carpus short, with two crests on outer surface, upper surface bearing row of pearly granules on midline; palm convex dorsally; outer margin of palm crested, divided into two lobes, distal lobe strongly convex outwards; fingers subconical, 1.3 times as long as palm along outer margin, covered with minute granules; both cutting edges of fingers armed with some sparse, fine teeth on distal halves, meeting only at tips.

Ambulatory legs (Fig. 3k) similar in shape, gradually decreasing in length from first to fourth, covered with pearly granules except dactyli; coxal condyles small, rounded; meri subcylindrical, with two triangular lobes on distal end and midlength of outer margins, lobes getting weaker from first to fourth legs so as to be absent in fourth leg; carpi triangular in cross-section; outer surfaces of carpi flat, crested on both margins, beaded on lower margins; propodi compressed, crested on outer margins; dactyli subconical, slightly incurved, covered with microscopic granules, with obvious dactylopropodal locks on proximal borders of dorsal surfaces, inner margins finely dentate.

Thoracic sternites coarsely covered with closely set, pearly granules of various sizes, deeply concave between sternites, episternites not divided entirely; first to third sternites fused together; abdominal cavity reaching to buccal cavern; both margins of abdominal cavity ridged on subdistal part, with V-shaped notch.

Abdomen (Fig. 3l) entirely covered with small round granules, with formula of 1+2+R+T; first segment short, transversely

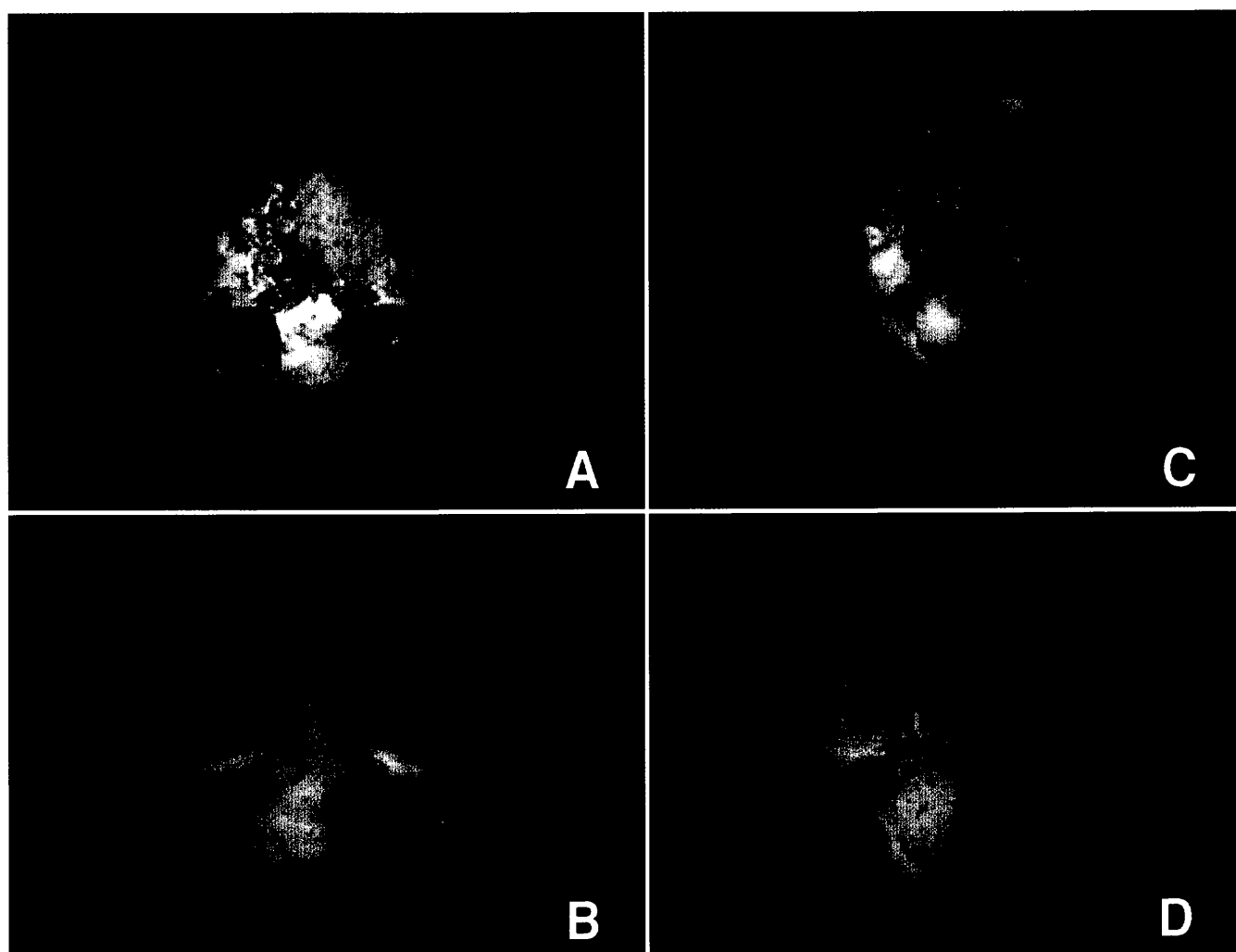


Fig. 4. A, B, *Merocryptoides frontalis* Sakai, 1963, male (NSMT-Cr. 10406; 4.8×4.4 mm; A) and ovigerous female (NSMT-Cr. 10406; 5.3×6.6 mm; B); C, *Merocryptoides ohtsukai* sp. nov., holotype, male (NSMT-Cr. 14184; 3.5×3.6 mm); D, *Merocryptoides peteri* sp. nov., holotype, male (NSMT-Cr. 9177; 3.9×3.9 mm). A, B and D from off Kisami, Shimoda, Izu peninsula, central Japan; C from off Tanega-shima Island, Osumi Islands, southwestern Japan.

subrectangular; second segment very short, transversely narrow, laterally concealed; main fused section elongate, rhomboidal, composed of third to sixth segments, both sides of proximal half swollen, concave between swollen regions, but gradually becoming convex along midline distally, highest and demarcated at proximal three-fourths length, constricted medially and distal one-third, bearing large tooth near distal

border, tooth directed somewhat posteriorly; telson acutely triangular with rounded tip, fringed with short setae.

First pleopod (Fig. 3m, n) slender, bent almost at a right angle medially, with long soft setae on proximal half of lateral margin and short stiff setae on distal half; tip translucent, weakly arcuate. Second pleopod (Fig. 3o) short, about one-third as long as first pleopod, proximal third broad, distaler

Table 1. The comparison between *Merocryptoides frontalis* Sakai, 1963, *M. ohtsukai* sp. nov. and *M. peteri* sp. nov.

	<i>M. frontalis</i> Sakai	<i>M. ohtsukai</i> sp. nov.	<i>M. peteri</i> sp. nov.
Gastric tubercle	with C-shaped ridge	with broadly V-shaped ridge	with Y-shaped ridge
Cardiac tubercle	transversely convex	longitudinally convex	longitudinally convex
Epibranchial margin	with anterior lobe	with anterior and small median lobes	with anterior lobe
Male abdomen	main section not convex along midline, telson broadly triangular	main section strongly convex along midline, telson acutely triangular	main section strongly convex along midline, telson acutely triangular
First male pleopod	sinuate, distal part directed mesially, tip curled	slender, bent medially, tip arcuate	slender, bent medially, tip weakly arcuate

part filiform; tip acute, directed rather laterally.

Color. In preserved condition, whole body off white, with light brown spots on frontal region and midst of metabranchial region.

Etymology. This species is dedicated to Dr. Peter K. L. Ng of the National University of Singapore, who generally supported and helped our study.

Remarks. The holotype of *Merocryptoides peteri* sp. nov. was collected with its congener, *M. frontalis*, by dredging off Kisami, Shimoda, Izu Peninsula, central Japan, at the depth of 18–45 m. *Merocryptoides peteri* can be, however, readily distinguished from *M. frontalis* as mentioned in the remarks of *M. ohtsukai*.

The comparisons of three species of *Merocryptoides* are summarized in Table 1.

Distribution. Known only from off Kisami (type locality), Shimoda, Izu Peninsula, central Japan, 18–45 m deep.

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